Point-of-Care Testing May Reduce Length of Stay but Not Emergency Department Crowding

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It seems intuitive that point-of-care testing should reduce emergency department (ED) length of stay for patients requiring blood tests and that this should reduce ED crowding. However, empirical evidence is required to determine whether theoretical promise is borne out in practice. Well-powered randomized trials are usually the best way of demonstrating the effect of changes in practice but are challenging to undertake. The authors of the related article[1] deserve great credit for completing this large robust study that provides an unbiased and precise estimate of the effect of using point-of-care testing on length of stay in their institution. They have shown that a 46-minute reduction in median turnaround time translates into a 22-minute reduction in length of stay. Many other factors influence length of stay, so it is perhaps not surprising that the effect of reduced turnaround times is attenuated. Indeed, as described in the discussion, other trials of point-of-care testing[2-4] have shown that reduced turnaround times are often not translated into reduced length of stay. This suggests that the effect of point-of-care testing varies between settings and depends on the extent to which other factors influence length of stay.

Reduced length of stay having been demonstrated, it is tempting to assume that this will translate into reduced ED crowding. However, this assumption needs to be tested because other factors may intervene. For example, it is conceivable that the availability of point-of-care testing could alter the threshold for ordering tests. The decision to order a blood test involves weighing the potential benefit of testing against the discomfort, cost, and inconvenience. Point-of-care testing, by reducing turnaround times, reduces the inconvenience of testing and may increase test ordering. If this happens, then length of stay may be prolonged for patients who would otherwise have been managed without blood tests and crowding will persist.

If we want to know whether point-of-care testing reduces crowding, then we need to use a different trial design. ED crowding arises from the interaction between patients and the staff and facilities available to manage them and thus relates to groups of patients. The effect of point-of-care testing on crowding is therefore best examined by randomizing groups of patients (ie, cluster randomization). Periods of time (such as days of the week) or whole hospitals are allocated to intervention or control, and all patients presenting in the same period or to the same hospital receive the same allocated care.[5] ED crowding can then be measured with a number of patient- and population-level outcomes.[6] Cluster randomization has disadvantages of loss of allocation concealment and statistical power[7] but allows one to determine whether using point-of-care testing improves ED operation and achieves economic benefits.

These comments are not intended to suggest that cluster randomization should have been used in this trial. Individual patient randomization provides the most accurate estimate of the effect of point-of-care testing on length of stay for the patient receiving blood tests. Knowing that point-of-care testing reduces length of stay is useful information for the physician who has the technology available but is unsure whether to use it, and an essential prerequisite to any assumption that point-of-care testing might improve overall ED function. The key point is that the method of randomization used in a trial determines the conclusions that can be drawn. In this trial, individual patient randomization allowed accurate estimation of the effect of point-of-care testing on median length of stay. Further empirical evaluation, ideally using cluster randomization, is required to determine whether point-of-care testing reduces ED crowding.

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DIAGNOSIS:

Bleomycin-related flagellate hyperpigmentation. Bleomycin is a common glycopeptide antineoplastic antibiotic used in lymphoma, germ cell tumors, and squamous cell carcinoma. Systemic toxicities of bleomycin include interstitial pneumonitis, pruritic erythema, desquamation of the plantar surface, and alopecia.[1] Flagellate pigmentation is a less commonly but uniquely described cutaneous toxicity in bleomycin therapy, with a reported incidence between 8% and 22%.[2,3] These adverse effects may be in part due to relatively low plasma level of bleomycin hydrolase in lung and skin, leading to increased pulmonary and cutaneous toxicity, as well as increased melanocyte stimulation and inflammatory oncotaxis.[4] Many patients experience a prodrome of generalized pruritus and erythema. For days to weeks after bleomycin exposure, minor skin trauma such as scratching or rubbing causes local vasodilatation and accumulation of bleomycin, resulting in hyperpigmentation.[5] Therapy may include topical and systemic agents in an effort to ameliorate cutaneous or systemic inflammation. After discontinuation of bleomycin, the cutaneous manifestations are often self-limiting and fade within 6 months.

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